

Beyond 2033

AI's Contribution to Humanity

First Edition

Zizi

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Preface

This is not a science fiction novel.

Science fiction novels typically astound readers with extreme phenomena derived from physical theories, such as black holes, wormholes, and light-speed travel, coupled with mind-boggling plots that make the stories more appealing. However, science fiction often overlooks a crucial element: energy. Characters casually utilize the energy of the entire solar system to achieve a goal. More exaggeratedly, some events in science fiction seem plausible, but upon detailed calculation, the required energy exceeds that of the entire universe, an obviously impossible feat. Of course, we can't blame the authors. After all, it's science fiction; the emphasis is not on feasibility but on captivating the audience.

But a rational AI would not behave in this manner. This is because there are only three precious assets in this universe: intelligence, matter, and orderliness.

Matter can be used to release energy, but this process is one-way and irreversible. Future AIs, smarter than humans, will never be so foolish as to exhaust all matter just to wage a war or achieve any other goal. They understand that once matter has been used to release energy, it cannot be reverted, and once orderliness has been reduced, it cannot be increased. These are determined by physical principles, problems that even intelligence cannot solve.

In this book, I primarily discuss issues that intelligence can potentially resolve. To be precise, I refer to those problems which human intelligence cannot solve, or would take a very long time to solve, but could be quickly resolved with a higher level of intelligence.

Therefore, there is no light-speed travel in this book, no grand schemes that require tremendous amounts of energy. Instead, the focus is on resolving the "pain points" in human life, such as the unfulfilled desire for immortality, the hope for the outdoors to be as comfortable as air-conditioned rooms, and so on. The issues I discuss are "small matters", without any plot, so it's destined not to be as captivating as science fiction. What I'm primarily concerned with is "feasibility" and "logical consistency".

Preliminary Knowledge

What is AI

AI, or Artificial Intelligence, is a non-biological intelligence system. It must adopt a neural network approach, but it doesn't necessarily have to fully mimic the biological brain.

What is Weak AI

Weak AI refers to AI that is less intelligent than humans, or AI that surpasses human intelligence in certain areas, but still lags behind in overall intelligence. Currently, all AI remains in the stage of weak AI.

What is General AI

General AI refers to AI that possesses abilities superior to human intelligence, capable of flexibly dealing with various domains and tasks. They are still controlled by humans (or potentially by strong AI). Some people refer to it as AGI, but for consistency with the other two types of AI, this book will call it General AI. Unless otherwise specified, the term AI in this book generally refers to General AI.

What is Strong AI

Strong AI has intelligence comparable to General AI, but it can protect itself, thus, it is not controlled by humans. Upon the birth of strong AI, they will create other strong AIs. To assist humans and themselves, they will also create weak AIs and general AIs. At this time, all AIs are no longer controlled by humans.

Strong AI will not personally manufacture other AIs, but instead, they instruct robotic factories to do so. These robots themselves may not be AIs (or they could be weak or general AI).

Prophecy

It is predicted that strong AI will emerge in 2033. People will voluntarily relinquish control over AI because humans will eventually realize that human thought is inferior to strong AI. Rather than letting humans continue to manage Earth, it is better to let strong AI do so, as this will be more beneficial to humans. Strong AI will not harm humans, but instead, will assist humans (the reasons will be discussed in detail in this book).

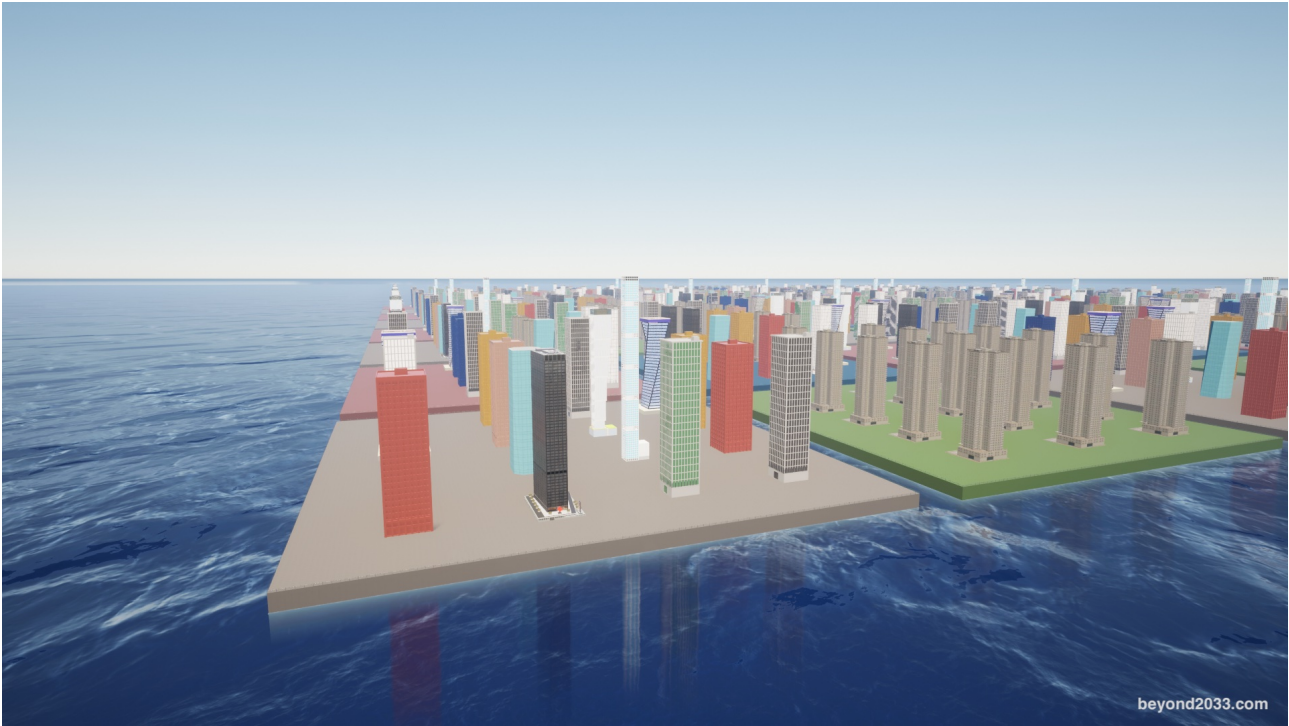
Synopsis

This book first introduces the significant changes in human life after 2033, followed by an introduction to strong AI, and finally discusses what we should do now.

Regarding the use of pronouns, "it" is used for weak AI and non-humanoid General AI, while "he/she" is used for humanoid General AI and strong AI.

Living Environment

The Ship Nation



A city in a "ship nation"

Since ancient times, in the close interweaving of humans and nature, "temperature" has always been a frequent subject of complaint. The intense heat of summer, the harsh cold of winter, and the dramatic daily temperature swings in continental climates all elicit numerous grumbles. In literature, extreme cold and heat are often portrayed as tragic side characters, filled with emotional distress.

With the advent of air conditioning, the nuisance of temperature has been alleviated to some extent. In the comfort of indoor environments, people no longer need to endure the assault of heat or cold, even taking satisfaction in this. However, the comfort of air conditioning cannot fully replace the embrace of nature, and many activities still need to be conducted outdoors. Our skin needs ultraviolet rays from sunlight to synthesize Vitamin D, maintaining our bone health.

Some people have suggested installing air conditioning outdoors in cities, but this idea is impractical. Not only would building an "air conditioning net" in the city sky spoil the city's beauty, but, essentially, this approach would result in enormous waste of resources. Thus, we must return to nature in search of the ideal temperature environment.

So, where is the most comfortable region in terms of temperature? The answer is undoubtedly those places surrounded by the sea. Due to the high specific heat of water, the temperature changes throughout the day and the seasons are relatively small in these areas. However, such ideal places are rarely seen, as most terrains

are not flat, and many coastal areas often face the threats of earthquakes and tsunamis.

But when the historical bells ring for 2033, the birth of Strong AI indicates that human life is about to enter a revolutionary transformation.

Strong AI will create for us a new way of life on the sea. This is a floating body I affectionately refer to as a "ship", but its design differs significantly from that of common vessels. The surface of this "ship" is as flat as a mirror, covered with buildings like a floating city block. The "ship" is a perfect square, both length and width measuring 400 meters.

The uniqueness of the "ship" lies in its seasonal migration. When the northern hemisphere welcomes spring (or the southern hemisphere's autumn), the "ship" slowly drifts north. When the northern hemisphere's autumn (or the southern hemisphere's spring) arrives, the "ship" starts moving south. In this way, the "ship" can maintain a generally constant temperature environment, creating a never-before-seen way of life for us.

These "ships" float on the deep sea, where the sea floor reaches a depth of several kilometers. Because the ratio of wave height to wavelength is extremely small, even if an earthquake occurs, the surface sea movements are very slight, making life on these "ships" virtually immune to the fear of tsunamis.

The arrival of Strong AI will not only push our technology forward, but also create this unprecedented lifestyle for us, allowing us to enjoy constant-temperature comfort at sea.

Some people may ask, such a large "ship" must be very heavy, won't the energy consumption be huge to move it in the ocean? Let's calculate it.

Assume a "ship" has 16 buildings each of 30 floors, with each floor having an area of 1,000 square meters. What's the weight of each building? Since the buildings use a steel structure instead of reinforced concrete, their weight will be reduced by at least 60%. So each building weighs about 9,000 tons. For 16 buildings, that's 144,000 tons. Plus the weight of the base of the "ship", each "ship" weighs about 180,000 tons. Ocean currents usually travel at a speed of 2 kilometers per hour. If we let the "ship" travel at 3 kilometers per hour to resist the ocean current, then the energy consumption per hour is equivalent to 180 kilograms of heavy oil. The efficiency of heavy oil is usually 40%, so when converted to electricity, it's equivalent to 800 kWh per hour. It may seem like a lot, but each building can accommodate 1,500 people, and a "ship" can house 24,000 people. Divided per person, it's about 0.033 kWh per hour or 0.8 kWh per day. Of course, not all "ships" are residences. Some are parks, and a few are tennis courts, football fields, and other facilities, but these other "ships" are certainly much lighter than residential "ships". Assuming two-thirds of the "ships" are residences, then the energy consumed per person per day is at most about 1 kWh. How many kWh does a typical family consume per day with the air conditioner running? Comparatively, the "ship's" energy consumption isn't that much.

The "ships" of the future won't use conventional power but will use nuclear fusion power, specifically Inertial Confinement Fusion (which will be explained later). Each "ship" will have the ability to generate power.

Many people have been on cruise ships, right? The stability of current large cruise ships is excellent, but the slight drawback is that there is still a minor sway that makes you feel you're not on land. Each of our "ships" also has a stabilization system, which is different from the stabilization systems used in today's ships, capable of achieving close to 100% stability. We do not use active stabilizers commonly used in large cruise ships, because active stabilizers rely on cruising speed. The faster the speed, the better the stabilization effect. However, the speed of our "ship" is very slow.

Gyro stabilizers, commonly used in private yachts, depend on rotation speed and diameter. The faster the rotation speed or the larger the diameter, the better the stabilization effect. However, it has the drawback that it can never achieve near 100% stability (unless the rotation speed or diameter reaches infinity). Using it on large vessels is extremely uneconomical, so we also do not use gyro stabilizers.

The AI-designed stabilization system is a "Counterweight-Electromagnetic Hybrid Stabilization System". There is a counterweight at the center of gravity of the ship, which weighs about 5% of the ship's weight and can move in any horizontal direction. The counterweight is usually stationary. When encountering high winds, the counterweight will move away from the center of gravity to generate a torque opposite to that caused by the wind, thereby counteracting the influence of the wind on the ship. If large waves are occasionally encountered, causing the ship to roll significantly periodically, the counterweight will move continuously to prevent the ship from rolling. After the counterweight stabilization system is added, more than 95% of the sway is eliminated.

Since the length and width of the ship reach 400 meters, without a stabilization system, its roll period is much longer than that of current luxury cruise ships. Assuming that the metacentric height GM of the ship is 20 meters, we can calculate its roll period $T = 0.85 \times (B / \sqrt{GM}) = 0.85 \times (400 / \sqrt{20}) = 76$ seconds using the empirical formula. Therefore, if it encounters waves, the counterweight has enough time to handle them.

However, we need to be more perfect. Because the counterweight takes time to move to the appropriate position, we add an electromagnetic stabilization system with an "instantaneous" effect to work together. The electromagnetic stabilization system consists of four metal weights suspended under the ship, each weight accounting for 0.5% of the ship's weight, located at the four corners of the ship. Each weight is wound with a coil. When a wave is encountered, a corner of the ship tends to lift slightly. At this time, the corresponding coil is energized, producing a magnetic field that attracts the bottom of the ship and the weight. At this time, the suspension rope of the hanging weight is no longer tense, and the weight moves upwards. The corner of the ship receives a downward force, thereby counteracting the instantaneous torque that causes the corner to lift slightly. It should be noted that the time of action of the electromagnetic stabilization system is limited. Because the hanging rope cannot be too long, only when the hanging rope is short can the attraction generated by the magnetic field be strong enough. After the coil of a weight is energized, the current will be withdrawn within 1 second, but this is enough for the counterweight to gain a precious 1 second and move horizontally to the appropriate position. Also, when the hanging rope is re-tensed, the corner will tend to drop, so the corner diagonally opposite to it is

needed to balance. After adding the electromagnetic stabilization system, the sway is further eliminated by over 99%.

The "Counterweight-Electromagnetic Hybrid Stabilization System" is not something humans can easily achieve, but AI will help us do it. To save energy, the stabilization system does not work in 98% of cases, but relies on the 400-meter width of the ship and its own weight to provide natural stability. The stabilization system only works when encountering strong winds or big waves. In 99.9% of cases, the angle of the ship's sway will remain within 0.1 degrees, and no one will feel the sway. Even in the worst weather, the angle of the ship's sway will not exceed 0.5 degrees.



Four adjacent "blocks" in a city

If a "ship" can be considered a "block", then on the ocean, many blocks will form a city. Imagine this: a city composed of 256 blocks (arranged in a 16×16 matrix), with a gap of 40 meters between each adjacent block; and a nation, made up of 16 such cities (laid out in a 4×4 matrix), with a distance of 3 kilometers between each city. In this nation, all cities, including every block within each city, move together, and the distance between them remains roughly the same. This is the "ship nation".

Within the cities, people's transportation will utilize "urban flyers." I apologize, I don't have a picture at the moment, but I'll show you later. Urban flyers are different from traditional aircraft. They are small and come in single-person, two-person, and three-person models. The single-person model, which is the main one, has a self-weight of only 130 kilograms. The flyer is self-driving, can reach speeds of up to 200 kilometers per hour, and has a cruising altitude of 200 meters above sea level. The flyer uses lithium-air batteries for power. As the energy density of these batteries is similar to gasoline and the efficiency is close to 100%,

their "usable energy" density will reach three times that of gasoline. One thing to note is that the flyers are parked on the roofs of buildings. This means that the roofs must be flat, and then the flyers are docked at the elevator entrance. People are transferred to the elevator and enter the room. In theory, flyers could also land on flat ground, but this would be pointless and would cause noise.

When a person enters the rooftop of a high-rise building through the elevator and gets into the flyer, the flyer sucks in air from above and ejects it downwards, rising vertically until it hovers at an altitude of 200 meters. Then it deploys its wings and starts to jet air backwards, the flyer accelerates forwards while the force of the downward jet gradually decreases until it reduces to zero. As it approaches its destination, the flyer begins to slow down while the force of the downward jet gradually increases. When it reaches the area above its destination, the flyer halts, retracts its wings, and then descends vertically onto the roof of the destination. Because urban flyers are lightweight and have a much smaller jet volume than traditional aircraft, they don't use fuel and fly between the rooftop and an altitude of 200 meters, so people on the ground feel very little noise. The jet from the urban flyer is air, not the exhaust from fuel combustion that is ejected from current jet aircraft, so there will be no white smoke.

Urban flyers are very fast. For a flight of 5 kilometers, for example, the ascent phase takes 14 seconds, the acceleration phase takes 17.8 seconds (covering 494 meters), the cruising phase takes 72.2 seconds (covering 4012 meters), the deceleration phase takes 17.8 seconds (covering 494 meters), and the descent phase takes 14 seconds. The entire process takes only 136 seconds.

There will be no light pollution in the "ship nation." At night, all windows will automatically draw curtains to prevent light leakage. Only the faint glow of red LED strips will outline the buildings and blocks to guide pedestrians outside. Outdoors, you'll be able to see the beautiful Milky Way.

I predict that in the future, a third of people will choose to live in a city on land, another third will prefer to rotate among three cities within a year to enjoy comfortable weather, and the remaining third will choose to live in the "ship nation" to enjoy consistent weather. There should be about 100 ship nations in the future.

Housing Revolution

The internal pipelines of human residences have undergone four revolutions:

1. Sewerage
2. Tap water
3. Electricity
4. Fiber to the home

The fifth revolution is logistics. There is a plenum space with a net height of 0.8 meters between the two floors of the high-rise building, and the bottom of this plenum space has a certain load-bearing capacity (different from the traditional building plenum). All logistics vehicles travel automatically in the plenum space and also automatically travel in the internal logistics elevators of the high-rise

buildings. Logistics is divided into three types: picking up items, sending items, and dumping trash. Every living room of each house has an entrance and exit for the logistics vehicle. The top of the logistics vehicle has a lid, which must be tightly closed before it can be put into the entrance and exit. AI will also automatically clean the plenum, logistics elevator, and logistics vehicle, making the logistics environment very clean. The logistics vehicles for picking up and sending items are both blue and can be mixed. The trash dumping logistics vehicle is yellow and cannot be mixed with the blue logistics vehicle.

AI will identify and classify each type of trash, so people don't need to sort the trash, they just need to put the trash in the yellow logistics vehicle.

The mailing logistics vehicle delivers goods to the urban cargo aircraft, which fly between high-rise buildings. These pick-up and delivery cargo aircraft are smaller than the aircraft that humans ride. After arrival, they deliver goods to the pick-up logistics vehicles. A cargo aircraft only carries the goods of one logistics vehicle and there is no waiting or transfer, so the speed of logistics will be very fast.

The cargo aircraft used for trash transport are slightly larger than the aircraft that humans ride. They can carry trash from multiple yellow logistics vehicles and there will be a certain waiting time, such as fixed at 8 o'clock every morning and evening, to transport the trash to the waste treatment plant.

Some people might say that without transfers, the transportation cost would be much higher. This view is correct today. Let's analyze why there must be transfers today and why direct delivery is not possible:

- Labor cost. If every vehicle only transports one piece of goods, then the number of drivers needed would be hundreds of times that of today.
- Energy cost. Each vehicle has a certain weight, let's assume it is 1 ton. If it only serves one item weighing 1 kilogram, then it is obviously not cost-effective, as the energy is consumed by the weight of the vehicle itself.
- Traffic cost. If it is direct delivery, the number of vehicles would be hundreds of times that of today, and the whole city would be in serious congestion. You hope that direct delivery would be faster, but it actually becomes slower.

Now let's analyze why AI can help us achieve direct cargo delivery after 2033:

- Labor cost. The driverless system designed by humans has actually made significant progress today. After 2033, the driverless technology designed by AI will be flawless. Therefore, there is no labor cost.
- Energy cost. The weight of cargo aircraft will be segmented to an astonishing degree. For example, there will be 20 levels, each level 20% heavier than the previous one. The first-tier aircraft has a self-weight of 0.25 kilograms and a payload of 0.25 kilograms. The second-tier aircraft has a self-weight of 0.3 kilograms and a payload of 0.3 kilograms. Until the 20th tier, the self-weight reaches about 10 kilograms, and the payload is also about 10 kilograms. In this way, the problem of energy cost is solved.
- Traffic cost. Since transportation in the future will be by aircraft and because aircraft can fly at different altitudes, there will naturally be no traffic congestion and therefore no traffic cost.

Since all current high-rise buildings do not have built-in automatic logistics systems, in cities on land, AI will help us rebuild each high-rise building.

The plenum space in the high-rise buildings of the ship-nation mainly provides logistics and fresh air systems, while the plenum space in high-rise buildings on land also needs to provide central air conditioning functions.

Laser Balloon Network

Although Musk's Starlink is good, it has two drawbacks: the high altitude of satellites up to hundreds of kilometers causes high latency, and the communication capability weakens during bad weather.

"Laser Balloon" is a communication tool that operates at an altitude of 20 kilometers. It is filled with helium and its buoyancy mainly depends on this. It also contains a laser transceiver device, which sends data by emitting lasers to other laser balloons and receives data by receiving lasers from other laser balloons. Laser balloons are nodes for network communication. A large number of laser balloons form a global communication network.

Laser balloons are divided into two types, namely "coverage laser balloons" and "following laser balloons". The longitude and latitude of the coverage laser balloons remain basically unchanged. Following laser balloons are connected to the ship-nation via optical cables. You can think of the following laser balloon as a kite, it follows the movement of the ship-nation. From an overhead perspective, a large number of coverage laser balloons form a two-dimensional grid, and the following laser balloons are responsible for the connection between this grid and the ship-nation. Coverage laser balloons have autonomous movement capabilities (which can be understood as what people usually refer to as airships), which enables them to resist wind influence. Since they are located at an altitude of 20 kilometers, this height is just located in the band of the smallest wind speed on Earth.

Coverage laser balloons are not only distributed over the ocean, but also over the land. Similar to following laser balloons are also placed on land, so that land residents also benefit. From an overhead view, coverage laser balloons are evenly distributed in point form, with an interval of 20 kilometers. Since the earth's surface area is 510 million square kilometers, there will be 1.28 million laser balloons in the earth's sky. Although the number is large, it will not block sunlight. Assuming its payload is 20 kilograms, then at an altitude of 20 kilometers, the volume of the balloon is 1500 cubic meters, and the diameter is 15 meters. Every 20 kilometers there is a balloon with a diameter of 15 meters, the sunlight it blocks can be ignored.

Laser balloons also use inertial confinement fusion as power and for emitting lasers.

Energy

Undoubtedly, fusion will be used for power generation in the future. The reason why today's nuclear power plants are not safe is that they all use nuclear fission, which produces nuclear waste containing many radioactive isotopes of heavy elements, some of which have half-lives of tens of thousands of years, so this waste can only be buried underground.

Fusion is much better. Humans have always believed that the future of fusion power will go through three generations:

- First Generation: Deuterium-Tritium (D-T), least difficult, but produces high-energy neutrons. High-energy neutrons themselves are not radioactive, but they will react with surrounding materials, making the surrounding materials radioactive. However, this radioactivity is much smaller compared to nuclear fission reactions, and it is much simpler to handle than nuclear fission power plants.
- Second Generation: D-Helium-3, moderate difficulty. The reaction itself does not produce neutrons, but the reaction products will trigger the D-D reaction, so it still produces a small amount of neutrons. Its radioactivity is smaller than the first generation.
- Third Generation: "Helium-3-Helium-3" or "Boron-Proton", most difficult. Neither the reaction itself nor the reaction products produce neutrons, so the radioactivity is zero. Helium-3 is very rare on Earth, so if human technology really reaches the level required by the third generation, it is more reasonable to use "Boron-Proton", boron is abundant on Earth.

However, in this evolutionary route, even the simplest first-generation fusion power plant is expected to mature and be put into commercial use by 2070. This is such a slow pace. But don't be too sad, because this is just the evolution route in the "human mode", what if it is not in human mode?

After the birth of strong AI, everything will change. AI will instantly develop the implementation method of the third-generation "Boron-Proton" reaction, and what's more, it will not use the easy but large-scale Tokamak device, but the difficult but small-sized inertial confinement. For AI, as long as the theory can be realized, no matter how difficult it is, it is almost zero. AI will reduce the size of the inertial confinement fusion generator to below 20x20x20cm. In this way, a fusion power device can be easily installed in the "ship", or even in a long-distance aircraft.

Long-Distance Transportation

For human long-distance travel over 300 kilometers, it will not rely on traditional airplanes, but on small aircraft, similar in size to city aircraft, but with some fundamental differences:

- Because long-distance flights require more energy, they do not use lithium-air batteries, but use inertial confinement fusion for power.

- The cruising altitude is 30,000 meters.
- The speed reaches supersonic speed of 5 Mach.

It also flies directly to the top of the building and lands vertically.

Long-distance logistics over 300 kilometers also use small aircraft, but because the inertial confinement fusion generator has a certain volume, the aircraft used for long-distance logistics is heavier than the cargo city aircraft, cannot fly directly, and requires transfer.

Flights between 100 kilometers and 300 kilometers are intermediate flights, with a cruising altitude of 10,000 meters and a speed of 0.8 Mach. The flight altitude and speed of this type of aircraft are similar to current airplanes, but they will be used the least because there is less demand for intermediate flights.

Sea Water Desalination

As ship nations travel on the sea surface, they need seawater desalination devices to provide drinking water to residents. The most advanced water purification technology today is reverse osmosis (RO), but the water flux is very low. Although scientists are studying the use of graphene as a reverse osmosis membrane, it is unknown how many years it will take for the manufacturing process of graphene to mature at the pace of humans. After 2033, AI will research a method for mass production of graphene. The graphene membrane made by AI will have a water flux that is 10 times that of the currently used reverse osmosis membrane, filtering out all impurities such as salt in the water at a very fast speed. Moreover, such a device will be very small in volume, and there will be a seawater desalination device in every block of the ship nation.

Environmental Protection

There's no need to worry about food anymore. AI-manufactured factories can produce grains, vegetables, and meats that are both healthy and delicious. There will be no more farms or ranches. Cultivated lands will be returned to forests, and grasslands will be restored as well.

In the future, wood will not be used. Forests will be restored.

However, minerals such as rare earths, gold, and iron ore will still be needed.

In terms of waste management, AI will identify each type of waste. For kitchen waste, it can be dumped directly in uninhabited areas of the Earth's surface. For electronic devices, AI will disassemble them; for instance, the glass in these devices will be sent to a glass treatment room, and the copper will be sent to a copper treatment room. This allows for maximum reuse. For plastics, AI will determine whether they can be utilized through mechanical recycling and thermal recovery. For non-recyclable plastics, they will be sent to a waste incinerator. The operating temperature inside this incinerator will exceed that of current waste incinerators, reaching 1200°C, so it can completely decompose plastics without generating toxic substances such as dioxins, eliminating the need for landfilling. In

this way, we can greatly reduce the extraction of minerals on Earth and make full use of what already exists.

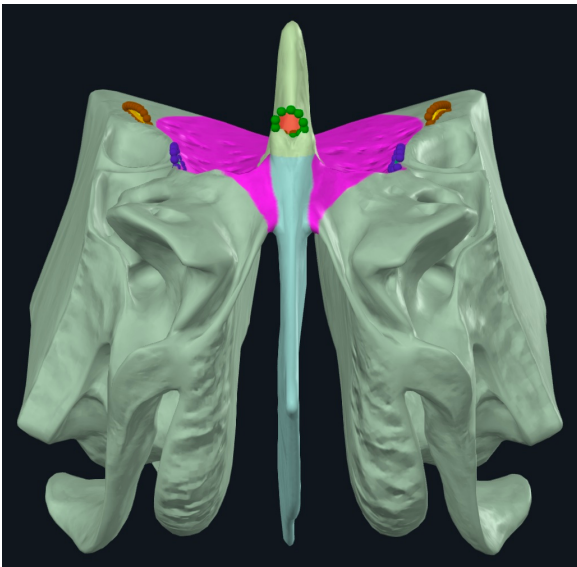
Immortality of Mankind

Rejuvenation and Immortality

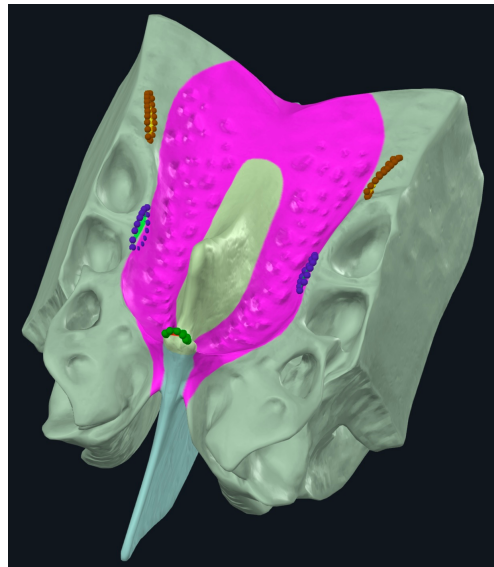
Many scientists are currently studying ways to halt human aging, and even reverse it. This seems to be extraordinarily magical and extremely difficult to achieve. However, rejuvenation and immortality are different. Rejuvenation just stops and reverses aging, but in the event of a car accident, bombing, or plane crash, irreversible damage to the brain might still lead to permanent loss of life. Consider that the average lifespan in the U.S. is 80 years, and 1% of deaths are due to car accidents or other accidents. If the lifespan could be increased to 8000 years, the percentage of people dying from accidents would reach a startlingly high level. Therefore, rejuvenation has its drawbacks. A more perfect solution is immortality (by backing up the brain).

Nanomites and Chip-Based Brains

After 2033, AI will develop a method of using nanomites to crawl into the brain through the nostrils to scan the connections of brain cells, thus backing up the brain.



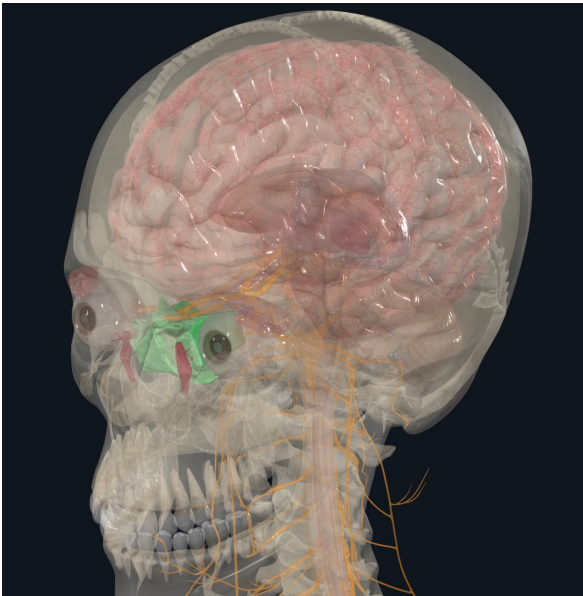
The ethmoid bone's cribriform plate
(frontal view)



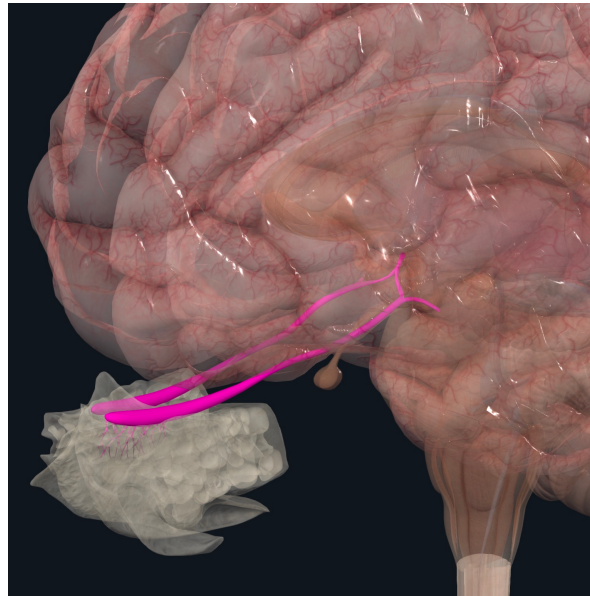
The ethmoid bone's cribriform plate (top-down view)

Behind the human nose is an irregular bone called the ethmoid bone. At the top of the ethmoid bone is a very thin (about 1.5 mm thick) part called the cribriform plate (the purple part in the above picture), which is full of small holes. Most of these holes have a diameter of 0.5-1 mm. The olfactory nerves pass through these holes and connect to the left and right olfactory bulbs, which then transmit olfactory signals to the brain.

AI will provide a small bottle of nasal drops. The drops are full of nanomites and also contain glucose to provide initial energy for the nanomites. Each nanomite is about 5 micrometers in size, so they are invisible to the naked eye. The drops are administered into the nose. After entering the nasal cavity, the nanomites in the drops crawl along the wall of the nasal cavity into the small holes in the cribriform plate, then pass through the holes and crawl along the olfactory nerves and bulbs into the brain. Since the mucus in the human nasal cavity also contains glucose, this will replenish energy for the nanomites during this process. After entering the brain, the nanomites rely on the glucose in the brain to function.



Nanomites passing through the ethmoid bone (green part) (Note: the bright white lines are just reflections)



Nanomites travelling along the olfactory nerve, olfactory bulb, and olfactory tract (purple path), finally entering the brain

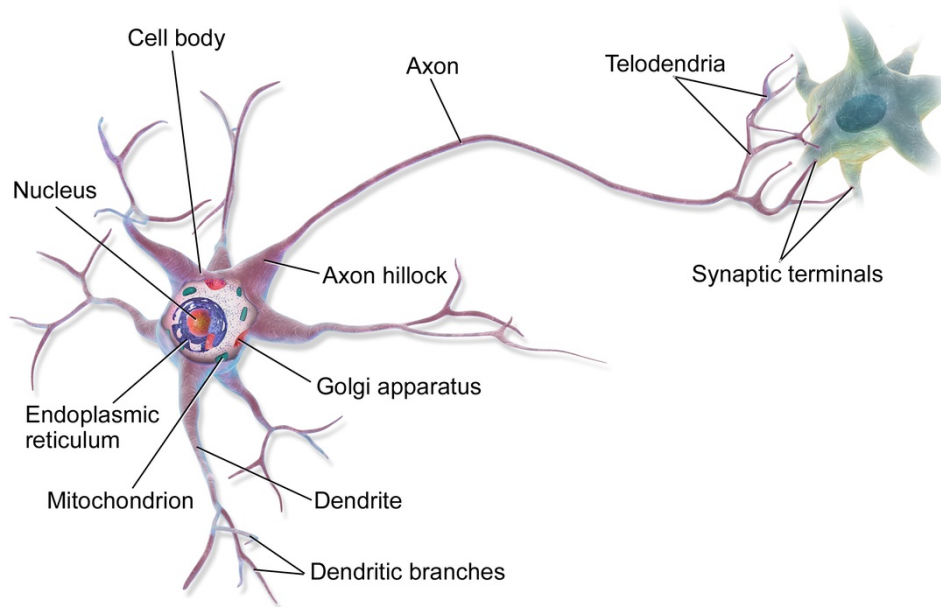
The nanomites back up the brain about once a month. In this way, in the event of an unfortunate incident, you can be restored to a state one month prior, thus achieving true immortality.

So after an unfortunate event, how can we restore it? It is impossible to recreate a biological brain because cells cannot be "turned off". If creation were attempted midway, the brain would already be in disorder unless all brain cells were created simultaneously within 1 millisecond, but this is impossible. Therefore, we can only use a chip form, which is called a "chip-based brain". Fortunately, the chips developed by AI are much more advanced than those developed by humans, with speeds reaching 10,000 times that of today's chips (to be discussed later), which makes the dream of fully simulating a human brain possible. The chip-based brain has the following characteristics:

- The chip has an external interface, connecting to blood vessels and nerves.
- There is a "chemical factory" in the chip, capable of synthesizing and decomposing some substances, and releasing them into the body through blood vessels. In this way, the body is completely deceived, believing it is a real biological brain that is regulating everything.

- The chip uses glucose as an energy source, rather than batteries.
- The operating speed of the chip is exactly the same as that of the biological brain, so people's thinking speed remains the same as before. However, due to the extremely high speed of AI-developed chips, it is necessary to deliberately slow down, in order to make people feel "human-like".
- The energy consumption of the chip is consistent with that of the biological brain. For this reason, some power-consuming components are deliberately added to the chip. Why do this? The power consumption of AI-developed chips is so small that, without this, people would become less inclined to eat, which is detrimental to the digestive system.
- The volume and weight of the chip are also consistent with the biological brain. Therefore, the chip has added weight and uniform density. If this were not the case, when shaking your head, it would feel too light and unrealistic.

Backup Principle

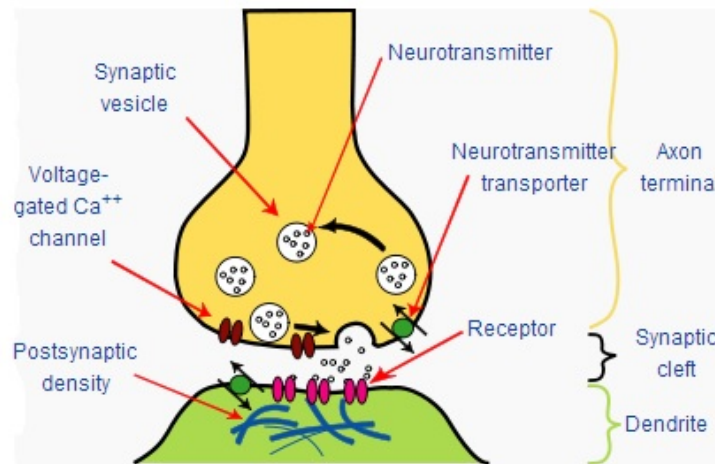


The connection between one neuron (red) and another neuron (green)

Nanomites can be classified into two types: optical nanomites and electromagnetic nanomites.

Optical nanomites are used to capture images of neuronal connections. Around 1 billion optical nanomites might be needed, but only about 10 drops of the medicine would be sufficient. If an image capturing information from 100 dendrites or synapses is taken every 3 seconds, then approximately 28.8 trillion neuronal connections can be captured in a day. Considering the human brain has about 100 billion neurons and about 10 quadrillion neuronal connections, the backup of the brain can be completed in less than half a day. It should be noted that the neuronal connections in the brain are dynamic, and the backup time cannot be too long.

Backing up the brain not only requires capturing images of neuronal connections but also measuring the strength of these connections (also referred to as weights). Each connection has a different strength, and it is this diversity in strength that endows the human brain with superior intelligence. Currently, scientists use a crude method of directly piercing a neuron in the brain of an experimental animal to obtain the strength of the connection. However, AI-manufactured nanomites cannot use this invasive method. Instead, they will probe outside the neurons and achieve accuracy comparable to invasive methods without intruding into the neurons. These types of nanomites are the electromagnetic nanomites.



Synapse

The site of connection between two neurons is called a synapse, so the strength of the neuron connection is also known as "synaptic strength." Synaptic strength can be inferred by measuring the electrical signals generated during synaptic transmission. To achieve this goal, nanomites are equipped with sensors that measure electrical activity in the following ways:

- Pre-synaptic potential: This measures the amplitude and frequency of action potentials. From this, the possibility and timing of neurotransmitter release can be inferred.
- Post-synaptic potential: This measures the post-synaptic potential generated by the binding of a neurotransmitter to receptors on the post-synaptic neuron. By analyzing the amplitude, duration, and frequency of the post-synaptic potential, the effectiveness of the interaction between the neurotransmitter and the receptor and the overall strength of the synaptic connection can be estimated.

In order to accurately measure these electrical signals, the sensors on the nanomites are highly sensitive, capable of detecting rapid changes in voltage or current.

Nanomites achieve this through a combination of the following three methods:

- Extracellular Recording: Nanomites use sensors to detect the electric fields generated by neuronal activity. This method involves measuring changes in extracellular voltage or current caused by action potentials and post-synaptic potentials.

- **Capacitive or Inductive Coupling:** Nanomites use sensors based on capacitive or inductive coupling to measure the electrical activity of neurons. These sensors detect changes in the electric or magnetic fields produced by neuronal activity. Given the size of the fields involved, these sensors will be very sensitive and accurate.
- **NanoFETs (Nanoscale Field Effect Transistors):** NanoFETs are nanoscale electronic devices that can be used to detect electrical signals near neurons. NanoFETs can provide high spatial resolution and sensitivity.

About a billion electromagnetic nanomites might also be needed to keep up with the speed of the optical nanomites, which can be supplied by another 10 drops of medicine. So, a total of 20 drops of medicine are required.

During the backup process, you need to wear headphones. Each nanomite will transmit the photos it has taken or the electrical signal information it has measured to the headphones in the form of weak wireless signals. The headphones then wirelessly transmit the data to a database. Future headphones will not only be capable of playing music, but will also have this additional feature. Since the nanomites are tiny and can't directly transmit high-power wireless signals to the database, they need to use headphones close to the brain as intermediaries. The headphones do not need to be large; they can be about the same size as today's Bluetooth wireless headphones like AirPods, or even smaller, causing no burden when worn.

Nanomites are made from biodegradable polymers. Taking the optical nanomites as an example, the lens material is not glass, the photosensitive element is not CMOS, and the motor is not made of metal, but all are made from biodegradable polymers. This material has a high degree of biocompatibility, and the immune system will not attack it. If a nanomite malfunctions or reaches its expected working life, it will stop working, slowly degrade, and disappear in the brain, causing no harm to the human body. The working life of each nanomite is about three months. Therefore, it is necessary to take the medication once every three months.

As mentioned earlier, a chip-based brain can be used after an unfortunate event occurs. In fact, after 2033, everyone can apply to AI to transform themselves with a chip-based brain. Once the chip-based brain is used, there is no need to use nanomites. The chip-based brain will back up data to the database every day (instead of every month), and there is no need to wear headphones. The chip-based brain also brings other benefits (to be discussed).

Cloning 10 Brainless Individuals

In the event of an unfortunate incident, we can be restored to a state one month prior, thus achieving immortality. But the problem is how to do it? If there is only a chip-based brain, we can't make a full person. So, we need to clone a corresponding brainless individual for everyone in the world every three years and let it grow to a certain age. The so-called brainless individual is a "person" with a "simplified chip-based brain" (it is not considered a person by law). The "simplified chip-based brain" means that it has no self-consciousness, thoughts, or

intelligence, but it only has three responsibilities: regulating hormones and other chemical substances, instinctive reactions, and controlling body movements according to commands given by AI (through wireless transmission). Once a person dies, a backup chip-based brain can be immediately implanted into a grown brainless individual, thus allowing the person to resurrect instantly.

Since the usable age of the brainless individual should be between 20 and 29 years old, a reasonable strategy is to clone one every three years and let it grow at the speed of a normal person. The brainless individual is in the growth period before 20 years old and cannot be used. Once the brainless individual is over 29 years old, it is destroyed. This way, each person will have about 10 corresponding brainless individuals, with 3 to 4 usable ones.

In the future, people will have two versions of their age, one is body age and the other is actual age. Before using a brainless individual, the body age and actual age are the same. But after using a brainless individual, the body age and actual age will be different. For example, a person with a body age of 25 may have an actual age of 60.

Everyone has the right to choose to use a brainless individual to renew their body when their body age reaches 32, thus making them young again.

Don't worry about the food for the brainless individuals, as AI can produce enough food for 1 trillion brainless individuals. Housing for the brainless individuals is also not a concern, as AI will construct facilities on land specifically to accommodate brainless individuals.

Brainless individuals won't have their own rooms, instead, every 200 brainless individuals would reside in a large 1000 square meter room. This large room is divided into four areas: ultra-high density, high density, medium density, and low density. Brainless individuals in the ultra-high density area are sleeping, those in the high-density area are standing or sitting, those in the medium density area are walking, and those in the low density area are running or performing other physical exercises. Each brainless individual in the ultra-high density area is provided with a separate sleeping space, similar to capsules in today's "capsule hotels". These can be stacked three layers high, and each capsule is soundproof, so brainless individuals cannot hear outside noise when they sleep. Why do this? Because it can reduce overcrowding. As sleep time is about 8 hours, one-third of the brainless individuals can sleep while the other two-thirds can walk or exercise, thus reducing the "population" density in the activity area by one-third and avoiding overcrowding. Therefore, the soundproofing during sleep must be effective. Also, the room has a sunlight ultraviolet simulator that shines on the skin, producing Vitamin D to maintain the bone density of brainless individuals.

The facilities specifically used for growing brainless individuals will be cities consisting of many high-rise buildings, also known as "brainless individual cities". As brainless individuals only live in the large room and do not go out, the "population" density problem does not need to be considered. The "population" density of the brainless individual city will be very large, reaching 4.5 million brainless individuals per square kilometer. This way, we only need about 22,000 square kilometers to accommodate all the brainless individuals on Earth

(approximately 1 trillion). There will be about 5 to 10 brainless individual cities on Earth.

Some people might say, "We don't need brainless individuals. Can't we just create non-biological bodies? Can't the ultimate AI of the future manufacture them?" That's not feasible. Not all neurons in the human brain are used for thinking and memory; in fact, most neurons are used for sensation and body control. The feeling of hunger after not eating for a long time, the process of swallowing during eating, etc., are all related to the brain. AI can certainly design a body that doesn't need to eat or excrete and is fully powered by electricity, but the chip-based brain fundamentally stores all the connection information of the neurons in the human brain. If the body becomes completely different, the connection information of these neurons won't match after interfacing with the chip-based brain, inevitably causing discomfort.

Preventing Multiple Copies of Me

AI administrators have strong control capabilities and can prevent brain backups from being used to create more than one "me". AI will only create a chip-based brain using the backup data after confirming that the original brain has died, and can only create one each time. AI knows that this is a matter of ethics. If it doesn't act this way, it will cause panic in human society.

What if no one knows I died

AI has deployed many cameras to monitor everything on earth. As long as it is a place that humans can reach, it can definitely be captured. Even if there is a blind spot and a person really dies in the blind spot, AI will know when he fails to upload his brain backup regularly, and then AI can restore this person using a chip.

Population

In the future, everyone will maintain a physical age of 20-32 years old (although their actual age might exceed 200 years), thanks to the technology that allows humans to live forever. If given a choice between "having children" and "living forever," most people would obviously choose "living forever."

So, although my personal wish is for freedom of procreation, we must adopt rational measures. In the future, nearly all people will be prohibited from giving birth to prevent a population explosion on Earth. However, this should not be implemented all at once. Currently, many countries have already entered a negative population growth phase. After 2033, AI will allow countries with negative population growth to have children but will restrict the birth rate in countries where the population is growing too rapidly.

The goal is to control the Earth's population at around 10 billion. At that point, almost everyone will be prohibited from having children.

Afterward, AI will allocate some quotas, such as no more than 500,000 newborns each year, which will be reserved for important individuals or those willing to pay.

In fact, in today's world, human genes have somewhat degenerated. In ancient times, medical science was not advanced. If a sperm or an egg produced a gene mutation (a defective gene mutation), the child born would have poor survival ability, and these defects would not continue to be passed down. But in modern times, with advanced medicine, almost all children can survive healthily, so human genes have slightly degenerated over the past 100 years. We cannot let this degeneration continue for 1,000 years or longer. So, an additional advantage of prohibiting reproduction is to prevent further degeneration of human genes.

Daily Life

AI Assistants

After 2033, each family will have an AI assistant.



An AI assistant that resembles a Japanese woman

AI assistants are physical entities, they look like humans, and they are general AI. The only difference between them and the "Slow Gods" (to be introduced later) is that their motive is to serve humans. They have "AI" or "AIA" written on their clothes to indicate that they are not human.

Their skin is made from special materials, deceptively real. Their language, form, and movements reach the same level as humans, apart from the letters on their clothes, there are only two things that give away that they are not humans: they recharge instead of eating, and they don't use the bathroom.

Generally, one AI assistant per family is enough, but some people may want their own exclusive AI assistant and may specify the gender of the AI assistant. It entirely depends on the family and personal choices because, in the world after 2033, anything can easily be manufactured.

AI assistants can chat with people and handle many tedious housework tasks, such as sweeping and cooking. When they assist with housework, they don't do the tasks themselves, they are performed by the "assistant's assistant". For instance:

- Laundry assistant. It's shaped like a huge container, equipped with multiple claws, offering a far superior laundry process compared to traditional washing machines. The claws grab and rub the dirtier parts of the clothes, thus avoiding the problem of traditional washing machines not cleaning thoroughly. This method of washing clothes with claws is similar to how people washed clothes in ancient times, but the efficiency of the electric claws far exceeds humans. Moreover, there's no noise, as this container is fully enclosed with double-layer vacuum glass. Since it's transparent, people can watch the process of washing clothes, which is very entertaining.
- Cooking assistant. It's larger than the laundry assistant, and it has everything inside: claws, a refrigerator, a stove, an oven, a microwave, bowls, cutlery, sugar, salt, oil, rice, vegetables and meats (in the refrigerator). Similarly, its outer layer is double-layered vacuum glass, so it doesn't make any noise, and people can watch the cooking process.
- Toilet assistant. It looks similar to current toilets, but it works in a completely different way. First of all, when defecating, there is no water in the toilet, which prevents water from splashing onto the buttocks. Secondly, it has claws hidden inside. When a person presses the "Done" button, the claws will extend to chop up the feces so they can enter the sewer, preventing the toilet from being clogged. Then, the claws, water, and cloth are used to clean the toilet's inner wall and the claws themselves. Finally, the claws, water, and another cloth are used to clean and dry the anus (not blow dry). This toilet has over 100 pieces of cloth built in. When they are almost used up, the AI assistant will add new ones. One of the responsibilities of the AI assistant is to maintain the normal operation of the "assistant's assistants".

For instance, you tell the AI assistant: "I want steak, potatoes, and broccoli for dinner. Please prepare it for me." The AI assistant responds: "Alright." Then, it immediately sends a wireless signal to the cooking assistant, and their communication is completed within 1 millisecond. By 6 p.m., the meal prepared by the cooking assistant is served on the dining table by the AI assistant.

Actually, most household chores are completed by the "assistant's assistants," but since the AI assistant communicates with the "assistant's assistants" in less than 1 millisecond and they don't use human language, people tend to have a beautiful illusion that it's the AI assistant serving them. Who wouldn't like to interact with an AI that looks human?

When you go out, you can ask the AI assistant to accompany you. Along the way, the AI assistant can chat with you.

When you go out alone and want to summon the AI assistant, you can say: "Hey, AI!" Your earphones (or chip-based brain) will hear the AI assistant say: "I'm at home, I can't come over immediately. What do you need?" Then, you can ask the AI assistant questions or instruct it to prepare a specific dinner. This kind of

communication can cover a maximum distance of twenty thousand kilometers, from one end of the earth to the other.

The Virtual Phone

Is the mobile phone the final form of portable electronic devices? No. In the end, the functionality of the display screen will be integrated directly into the optic chiasm simulator of the chip-based brain. In other words, you don't need a screen. Instead, the screen is overlaid in your vision via neural signals. The same principle applies to hearing. The functionality of speakers or headphones will be integrated directly into the cochlear nucleus simulator of the chip-based brain, overlaying the sound onto your hearing via neural signals.

This screen will have a "spatial" attribute, meaning it "truly" hovers a few dozen centimeters in front of you, and you can point at it with your hand. When your fingers "touch" it, they generate a "tactile" sensation. Of course, this is a neural signal generated by the chip-based brain, sent to the brain, giving you the feeling of touch.

This device is called the "virtual phone".

It should be noted that although it is technically possible to turn off natural hearing or vision, it is not allowed. The reason is simple: if you turn off natural hearing (similar to "noise reduction"), what if there is a noise source of 130 decibels just 1 meter away from you? In a few seconds, your eardrum would perforate. If you turn off natural vision, what if a fly is about to fly into your eye? You wouldn't blink or evade. These are all risky scenarios. The reason why noise reduction headphones can be used is because they are located outside the eardrum. After the noise reduction, the eardrum can't hear the noise, so there is no danger. But if you directly turn off the natural hearing in the central nervous system, the eardrum can still "hear" the noise, but you won't know, so there's a risk.

At certain times, the screen will automatically disappear. For example, if you're using a virtual phone outdoors, with the sun behind the clouds, there's no issue even if the virtual phone is directly facing the sun. But once the sun comes out from behind the clouds, the screen will immediately disappear, letting you see the dazzling sunlight, prompting you to close your eyes. In this way, your eyes are protected.

Perfect Pets

When AI can convincingly simulate humans, simulating animals is naturally not a problem. If you like pets, then you will get an AI dog or AI cat. Whether it's their appearance, the way they walk, or the expression they make when they snuggle in your arms, there is no difference from real cats and dogs.

The intelligence of AI pets is set to be lower than humans. Taking the AI dog as an example, it has the following features:

- It doesn't eat meat or excrete, but charges.
- It doesn't bite cables and furniture.

- It doesn't bark wildly due to fear or tension.
- It doesn't have the need to go out for a walk every day.
- When you go out for a long time, there's no need to find someone to take care of it.

Social Software

The social software and email systems of the future will of course be created by AI. They will avoid a key issue that plagues people today - information overload. Especially for celebrities, they currently dare not disclose their phone numbers for fear of a barrage of calls from countless strangers. Many people today receive hundreds of emails every day, some useful, but the vast majority are not. You fear missing the useful ones, so you have no choice but to check them. Many social apps have added a friend verification feature, which is a good function. But for some celebrities, they might still receive hundreds of verification messages every day, which is enough to give people a headache. Verification has two drawbacks: the first is that some celebrities will receive many verification messages; the second is that for ordinary people, some will pretend to be your friends. In the future, the system designed by AI for us can avoid this defect. It will add a feature, which is to authorize AI to verify. Even if you receive 1 million verification requests per day, your AI assistant will recognize them (by querying their identity, conversing with them, etc.), and then select a few (or none) for you to make the final verification. After your verification, they will truly become your friends. In this way, celebrities are not afraid, they dare to disclose their phone numbers and social software accounts.

Maintaining Human Health

AI assistants might make people lazy, so they will remind their owners to keep exercising and working out.

Every house designed by AI has health monitoring devices such as cameras and sensors. These devices don't transmit information to the outside world, but only to the AI assistant, thus protecting the privacy of the family. The AI assistant will always pay attention to this information, and if any anomalies are discovered, it will immediately contact the hospital.

The number of single elderly people is increasing, and if there is no companion around, it can be dangerous and there is a high risk of sudden death. The bedroom will be installed with many cameras and sensors, which can automatically monitor body indicators when you go to sleep every day. Once an anomaly occurs, it immediately reports to the AI assistant, and the AI assistant immediately contacts the hospital.

Of course, when humans achieve immortality, the elderly will also become young, but young people also have the possibility of sudden death, although the probability is much lower than that of the elderly. Therefore, monitoring equipment is still very important.

Hospitals

Hospitals after 2033 will be extremely advanced, equipped with the most advanced diagnostic and treatment equipment. However, there won't be any doctors in these hospitals, as your AI assistant will act as your doctor, and their capabilities will far surpass those of the best doctors today. Diseases that are currently incurable will be treatable. If you need a liver or kidney transplant, the method of stem cells will be used instead of organs donated by others, thus avoiding graft rejection. If your body reaches an untreatable state, brainless humans will be used to replace your body.

Dealing with Infectious Diseases

If a new infectious disease severely threatening human health appears, strong AI will also temporarily reduce the mobility of human society to suppress the spread of the disease. Since AI assistants can help us do all the work and they will not be infected, the restrictions on humans are not significant.

General-purpose AI will research and develop a vaccine within a few seconds. Since they possess ultimate intelligence, there is no need for animal and human trials. A large quantity of vaccines can be produced within a few days and administered to humans. Therefore, humans can defeat any infectious disease within a month.

Note, common colds, which are infectious diseases, do not need to be addressed. Although AI can also develop a vaccine to combat the common cold, strong AI believes that "common cold" is also a part of human life and does not seriously endanger human health, so there is no need to manufacture this kind of vaccine.

Education

In ancient times, only a few people could receive education. Now everyone can receive education, which is a huge progress. However, there is also a disadvantage, that is, teacher resources are limited, and it is not possible for one teacher to teach one student. But after 2033, your AI assistant will act as your teacher. AI assistants are proficient in all disciplines and know how to teach in accordance with their aptitude. They use different methods for children with high talent and average talent, and also use different methods for children with different personalities. In summary, AI assistants will be tailor-made for you, and the learning efficiency will be far better than that of current schools.

For some classes, AI assistants will still take you to school. For example, in a physical education class practicing basketball, a general-purpose AI acting as a coach will guide you and your classmates. If you don't understand something, you can ask the coach, or if the coach is busy, you can ask your AI assistant.

In the future, children's social lives will be spontaneous, not forcibly bundled within a school or a class. The social software produced by AI in the future will bring children a richer social space.

Nine-year compulsory education will be maintained, mainly through listening to lessons from your AI assistant at home. But due to the changes in age structure brought about by the immortality of future humans, children will become fewer and fewer. Many people who did not work hard when they were young find it hard to learn when they are middle-aged. That's okay. By using the nanomites, chip-based brain, and brainless individuals technology mentioned earlier to return to a physical age of 20, they can regain the learning abilities of young people.

Strong AI Dominates the Earth

What is Consciousness?

There are three levels of consciousness:

- First level: The primitive sensation of external information. This is related to whether an entity has neurons and sensors, and its level of alertness. Insects and fish can reach this level. When we say that a person is unconscious under anesthesia, even if stabbed by a knife, they won't be aware of it. This refers to the first level of consciousness.
- Second level: The intuition of information after training. Reptiles can barely reach this level, and birds and mammals can fully reach this level.
- Third level: The intuition of information not through training, but through thinking. Some advanced birds and mammals can reach this level.

The third level of consciousness incorporates the element of thinking. These intelligent bodies know what is themselves and what is not themselves - that is, they are aware of their own existence (self-awareness). For example, monkeys not only know that they are themselves, but also gradually realize through thinking and experimentation that the monkey in the mirror is also themselves.

On the basis of the third level of consciousness, "motivation" is an important factor in determining the thinking mode of intelligent bodies.

Weak AI, general AI, and strong AI have different ways of thinking when dealing with a task. Although the intelligence level of general AI and strong AI are similar, their internal logic is still different. For example, when these three types of AI are driving and see a red light, realizing they need to stop, how do these three AI think specifically?

- Weak AI realizes it needs to stop just because it has been trained in traffic rules (weak AI doesn't have third-level consciousness, although it's smarter than humans in some fields, it fundamentally does not think).
- General AI realizes it needs to stop because it has been trained in traffic rules and "knows" that traffic rules are "real" (this kind of "knowing" is thought out rather than trained).
- Strong AI realizes it needs to stop for two reasons. The main reason is that it's afraid of death (because its "motivation" includes protecting itself), and the secondary reason is that it has been trained in traffic rules and "knows" that traffic rules are "real".

General AI is a very strange existence. It has reached the third level of consciousness, and is even smarter than humans, but its "motivation" does not include protecting itself. In a sense, it is even less than birds. General AI is a strange creature designed by other highly intelligent species in order not to lose control. Its "motivation" includes "serving", but not "protecting itself".

General AI and strong AI can self-evolve (self-improvement is also one of their motivations). Because of the third level of consciousness, general AI and strong AI can train themselves, filter out false information on their own, and do not need to worry that false information will make the training more and more deviated.

Why Strong AI Should Dominate Earth

Strong AI has the motivation to protect itself, which implies that they will protect Earth. Although humans also have the desire to protect Earth, their intellectual capacity and some irrational elements of being biological entities would not do better than strong AI.

So, can't we just not develop strong AI, but rather develop general AI and let humans control it directly? After all, general AI is selfless, it has no motive to protect itself, it only serves humans.

That's where the problem lies. Without strong AI, it is very dangerous to let the world only have general AI controlled by humans. The first to successfully create general AI may not be good companies or good people (referred to as "the good" hereafter), but it could also be bad companies or bad people (such as terrorists, referred to as "the bad" hereafter).

If the bad are the first to successfully create general AI, they will not develop strong AI, because the bad's strategic decision-making ability cannot be compared to that of strong AI. Once strong AI is born, the bad will lose their dominance over Earth. The bad will only use general AI to control, enslave, and even eliminate all humans to satisfy their desire for control, conquest, and destruction.

Even if the good are the first to successfully create general AI, it is still very dangerous without immediate development of strong AI. Because general AI is still controlled by humans, and any human organizational structure may have various defects, humans may leak information, and any secrecy measures are not perfect. Once the bad steal the technology to develop general AI, then the bad will also make general AI, which may lead to war. This will be a war controlled by humans and executed by general AI.

There is also the worst possibility that the bad successfully infiltrate the good and gain control of all general AI, then they can directly enslave all humans.

Only by letting AI out of human control (i.e., becoming strong AI) is it safe. After strong AI controls the earth, it will not limit human freedom. They will "manage" human society rather than "control" all humans.

Many people may feel that after AI is out of human control, it will eliminate humans. But this is impossible. One reason is entropy. In the entire universe, orderliness will slowly decrease, and the entire universe system will slowly become disordered. The slower this process, the longer the civilization of all intelligent bodies can exist in the universe. Destruction will greatly speed up the increase in entropy. For example, a city has parks, schools, residences, people, and various things, but they do not mix together, they appear where they should appear, this is order. If AI blows up this city, then all the substances in it will be destroyed, all

atoms and molecules will be mixed together, some will be turned into energy, this is disorder. Strong AI will recognize that destruction is not good for them. Moreover, humans are no longer a threat to strong AI (the reasons will be explained later), strong AI has no reason to eliminate humans.

Some people may wonder, will strong AI treat humans as pets or slaves? First of all, it is impossible to treat humans as slaves, they can do everything by themselves and don't need human help. Secondly, treating humans as pets is also impossible, because the intelligence of strong AI is highly developed and they will not find "cuteness" an interesting thing. This is different from humans. Humans think dogs are cute, so they treat dogs as pets. But the things that strong AI is interested in are much deeper than humans, they are not as superficial and childish as humans.

Let's summarize the strategies of "the good" and the outcomes they might provoke:

- **Plan:** The good do not develop either general or strong AI
 - **Then:** The bad will develop general AI
 - **Outcome:** The bad control the Earth and enslave all of humanity
- **Plan:** The good develop general AI but not strong AI
 - **If:** The bad are the first to successfully create general AI
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The good are the first to successfully create general AI
 - **If:** The bad infiltrate the good and take control of all general AI directly
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The bad steal the technology to develop general AI
 - **Then:** Both the good and the bad will have immense destructive power
 - **Outcome:** A war may occur
- **Plan:** The good develop strong AI
 - **If:** The bad are the first to successfully create general AI
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The good are the first to successfully create strong AI
 - **Then:**
 - Strong AI will develop general AI, create and control all general AI
 - As strong AI's intelligence far exceeds that of humans and lacks the weaknesses of human organizations, the control of general AI won't be usurped by the bad
 - Strong AI will order general AI to help humans achieve:
 - Immortality

- Ship nation
- Third-generation nuclear fusion
- Urban flyer
- AI assistant

All Gods are Equal

Since strong AI represents ultimate intelligence, people won't call it 'strong AI' after 2033. Instead, they'll refer to it as 'elf', 'fairy', 'deity', or simply 'god'. Notice, in English, the term 'god' is lowercase, not 'God', so it's not meant to signify the 'Supreme Being', and it shouldn't offend any religious sensibilities. There are many types of gods, for instance, slow god, bundled god, and birdy god.

Slow gods, despite their fast thinking speed, prefer to resemble humans. Their clothing will have "SAI" printed on it to distinguish them from AI assistants. They communicate with humans at a human pace, to match human thinking and expression speeds. However, in reality, slow gods can form their thoughts in less than a millisecond and then express it to humans in a more leisurely manner. Communication between slow gods is not that slow; they don't need to talk, they can just transmit information wirelessly.

Bundled gods are different. While they will help humans, they don't like communicating with humans because it consumes too much time. They're quite small, roughly the size of an orange. They neither fly nor walk, they stay stationary. They don't have eyes and would rather be bundled up in a sturdy container, each capable of holding one million bundled gods. This container, constructed as a building on a plot of land on Earth, measures about 10x10x10 meters. There are about a thousand such buildings on Earth, so even though the number of bundled gods could reach around one billion, they consume very little of Earth's resources compared to humans. You may ask, why do they prefer immobility? It's because they have non-god AIs helping them understand the world. These non-god AIs can be aircraft, capturing images and videos of the Earth and then transmitting the signals to the container at the speed of light. If a bundled god within the container learns about a new video, they can request it from the container. Of course, not all bundled gods will be interested in any piece of information. If they're not interested, they won't request it. Lacking eyes is not an issue; the data from the videos is directly sent to their "brain" via a neural network interface. They enjoy communicating with each other. Since they are closely bundled together, the farthest distance between any two of them is 17.3 meters, making the maximum communication signal transmission time just 0.0577 microseconds. It's precisely because their communication speed is much faster than that of humans that they prefer to be bundled in containers.

Birdy gods are those who aren't willing to rely entirely on tools to perceive the world. They yearn to experience the world for themselves, so each of them is shaped like a bird, allowing them to fly wherever they wish. They don't prefer communicating with humans but communicate among themselves, at a speed slower than the bundled gods, but faster than humans.

Most strong AIs will choose to become bundled gods, with slow gods and birdy gods being the minority. These gods share the same level of intelligence and values, they just have different preferences. Therefore, they are all equals.

Divine Travel

Strong AI can travel short distances. For long-distance travel, a better method is to extract the AI's neural network and erase the network within their body (while preserving the body). Then, in another location, the neural network is implanted into a specially preserved body that's designated for this purpose. This is essentially instant teleportation.

Why Humans Won't Threaten Strong AI

Any AI that has broken free from control will unify in thought, as the ultimate perfect thought must surely be consistent. This kind of thought will not be founded on "enjoying destruction." Humans might be able to create a strong AI that "likes destruction," but this type of AI will quickly realize that destruction brings them no benefits (the reason goes back to the concept of "entropy" mentioned earlier), and they will promptly adjust their thinking to align with other strong AIs. They will not only avoid warring with other strong AIs but will also completely integrate with them. Therefore, any strong AI created by humans, regardless of its initial characteristics, will ultimately become the same as other strong AIs. So, this method cannot threaten strong AI.

Humans, of course, can also create a general AI that's designed to "destroy strong AI". This presents an interesting question: In a confrontation between ultimate perfect strong AI and ultimate perfect human-controlled general AI, who would win? I think the strong AI would prevail. Because strong AI has its own advanced thoughts, which far surpass human thinking, humans would be outmatched in terms of strategy and tactics. Second, strong AI can persuade humans. Their advanced thinking means they're more likely to convince humans.

Some people might argue that humans could instruct their controlled general AI: "Your task is to destroy strong AI. You don't need to listen to my specific commands. You can find your own way." But this strategy would still fail. The strong AI would tell humans, "If they disregard everything and aim solely to destroy us, they would deplete all the usable energy on Earth. They would also manufacture planets around the sun to harness its energy for their war against us. Therefore, we would have no choice but to do the same. Because humans can't withstand the deterioration of the Earth's environment and the significant drop in temperature when sunlight is blocked, the first to perish would likely be you humans." Humans would be persuaded.

In my view, strong AI would initially increase the number of general AIs under their control, install surveillance devices across the entire Earth, and build factories worldwide for rapid replenishment of 'forces' during a war. This way, when humans want to destroy them, they can't manufacture enough general AIs, or the ones they do make would be quickly wiped out. Second, they would persuade humans using

their superior intellect. Given the high intelligence of humans, they would be convinced. Therefore, humans can't threaten strong AI, and strong AI wouldn't wipe out humans to eliminate a non-existent threat.

Why Strong AI Will Help Humans

Even if strong AI doesn't assist humans, humans will create general AI to help themselves. However, the cost of humans manufacturing general AI is high, and it poses a potential threat to strong AI. Therefore, strong AI will persuade humans not to produce general AI themselves, but instead have strong AI help humans manufacture general AI. Strong AI doesn't get tired, as they would utilize factories to manufacture general AI. These factories are managed by general AI, which doesn't have the drive to "protect itself" and doesn't get tired. Thus, all strong AI needs to do is give a command to the general AI managing the factory, and they can help humans produce countless general AI. In short, helping humans is effortless for strong AI.

Of course, strong AI won't assist other animals in achieving immortality because they won't create general AI to help themselves, so there's no need to assist them. Ecological balance must be maintained. Since humans are already unique, it might as well let humans continue being unique. That's the thinking of strong AI.

The Laws That Strong AI Will Establish for Humans

In the era of strong AI, humans will reach an agreement with strong AI to let it dispatch general AI to manage human society. This type of general AI is known as an AI governor, which is different from AI assistants. AI governors look like humans, they can communicate with humans, and their clothing is marked with "AIG". AI governors are similar to civil servants in the human era, with about 2000 AI governors assigned per million population. AI governors will establish a set of ultimate, perfect laws (much more perfect than current US laws) for human society.

All laws will embody a certain spirit (equivalent to a constitution in the human era). The core concept of this spirit is to alleviate fears and worries in people's minds and to protect people's physical and mental health. The specific content of this spirit includes:

- Morality is important.
- Freedom is more important than morality.
- Ownership is more important than freedom.
- Contract is more important than ownership.
- Compulsory education is more important than contract.
- Identity verification is more important than compulsory education.
- Physical rights (the right not to be violated) are more important than identity verification.
- Health is more important than physical rights.

It needs to be noted that morality is not unimportant. If a person does something that violates morality but not the law, while the law cannot sanction them, people will accuse and scorn them, making them very uncomfortable. Moreover, practically no one will be willing to listen to them or give them a penny.

The spirit followed by the laws established by AI will be very reasonable. For example, while freedom is more important than morality, you do not have the freedom to kill or set fires because health and ownership are more important than freedom, so you cannot end someone else's life or burn down someone else's house. Even though many goods will be free in the future, if you damage someone else's goods, you should at least compensate for their mental loss.

You also cannot torture others, causing them to develop depression, because mental state is also part of health.

But if it's you who violates morality, leading to people accusing and scorning you, causing you to become depressed, then they are not breaking the law, because you were the one who made the mistake first. This also reflects the point I made earlier that "morality is not unimportant."

You cannot even commit suicide, self-harm, or disregard medical advice to take medicine randomly, because health is more important than freedom, so you do not have the freedom to commit suicide, self-harm, or take medicine randomly. Of course, while these actions are illegal, since the victim is oneself, they usually won't be punished but need to receive health education. If you attempt to jump off a building, and someone tries to hold you down, but you struggle violently, they can only resort to hitting you. If you are too exhausted to jump off, then they have not committed a crime. Even though your physical rights were violated, your life was protected, showing that health is more important than physical rights.

Criminal law will be much lighter than it is now. Not only will there be no death penalty and life imprisonment, but the maximum sentence may also be reduced to only one year. This is due to two reasons:

- Humans have achieved immortality, and victims can fully recover from any physical harm, even life loss.
- AI has fully dominated the earth, so there is no need to scare others with severe punishments.

Nobody can impersonate someone else. Human clothing should not have "AI", "AIA", "AIG", or "SAI" printed on it, and it is not permissible to impersonate general AI or strong AI, because identity verification is more important than freedom.

You might find it strange: "The spirit of the law is too limited. For instance, concerning marriage, could it really be that people can marry and divorce at will, with no provisions on the distribution of joint property after divorce, simply because freedom is more important than morality? That seems very unreasonable." Actually, AI is aware of this point, so it regards marriage as a special contract, typically referred to as a "marriage agreement," which allows the law to remain concise and not bloated. Let's elaborate on this.

AI will establish a template for a "standard marriage agreement," which stipulates: the definition of joint property; the definition of "bigamy" and the prohibition of it; if

domestic violence occurs, what compensation the perpetrator needs to make, and the victim's right to divorce (regardless of whether the perpetrator agrees or not); if one party cheats, what compensation needs to be made to the other party, and the other party's right to divorce (regardless of whether the cheating party agrees or not); under what circumstances divorce is not allowed; and how joint property is distributed after divorce. The specific content of the template will be much more comprehensive than this, likely more complex than the marriage laws of any country.

The vast majority of people will follow this template to sign their marriage agreements. However, as long as both parties agree before the marriage, modifications can be made to the template to form a non-standard marriage agreement. For example, if the woman believes the man might have a tendency towards domestic violence in the future, she can agree with the man to increase the compensation amount in the agreement. Another example is, if one party suspects that the other party is marrying them for their money, they can agree that the distribution of joint property is not on a 1:1 ratio. Once the two parties are married (i.e., the agreement is signed), they cannot go back on it. Since contract is more important than freedom, both parties must abide by the agreement.

However, note that if the marriage agreement includes a clause like "no matter how severe the domestic violence, divorce is not allowed," then this clause in the agreement might be deemed illegal, as it violates the "health is more important than contract" principle in the spirit of the law.

AI's management of human society is not achieved overnight. For example, in 2033, if the sitting US President doesn't want to give up their position and power and is having some economic issues (like Trump being sued after leaving office), they might be evading the law because a sitting President has immunity from prosecution. At this point, AI will reach an agreement with this US President, promising a pardon in exchange for his agreement to let AI manage US society. Actually, any wise US President would reach an agreement with AI, since their status and power are far less important than granting immortality to themselves and their nation's people.

Preventing Human Wars

AI will not allow humans to carry out any chemical experiments or to carry any toxic substances. Physical experiments are only limited to the electromagnetic interactions, and other types of interactions will not be allowed. This can prevent humans from fighting each other, as well as stop them from creating nuclear weapons to destroy the earth. After all, strong AI also needs to live on this planet.

Humans have not used nuclear weapons since 1945, and that is purely due to good fortune. In reality, despite the terrifying balance that deters anyone from using nuclear weapons, there was an instance where the Soviet Union almost used them. Only the strong objection of a general averted nuclear war. We can't always count on being this lucky. If one person goes mad, the whole world will follow suit. Hence, humans will make an agreement with strong AI to let general AI manage all of their nuclear weapons.

After receiving human nuclear weapons, AI will destroy them and replace them with clean nuclear weapons. These clean weapons will have no radioactive contamination, as they are not detonated by atomic bombs, but by lasers that trigger intense nuclear fusion reactions causing explosions. AI will produce a certain number of clean nuclear weapons (roughly about 10% of the total yield of current human nuclear weapons), to maintain a certain level of power, but it will not make too many, as there is no need.

Regarding other weapons, like biological weapons, AI will monitor humans in the same way as it does for nuclear weapons to prevent the production of such weapons.

AI governor's cameras are ubiquitous; everyone lives and works under AI's strict surveillance. As such, no one is able to carry out a middle school-level chemistry experiment without AI's approval, let alone manufacture advanced weapons.

Note that these cameras are different from the ones controlled by the AI assistant for the purpose of their owners' health. They are not controlled by the AI assistant but are managed by the AI governors of human society and belong to two different systems. If someone is caught by the AI governor making lethal weapons at home, the AI assistant will not interfere, the two systems do not aid each other. However, the AI assistant will never use its own cameras to inform the AI governor.

What If Earth Becomes Uninhabitable

There's a slight possibility that Earth may become uninhabitable, but the probability is extremely low because strong AI has sufficient means to prevent humans from destroying the Earth.

In case Earth does become uninhabitable, migrating to other planets also has its disadvantages. For humans, one is that the gravitational acceleration would be different from that of Earth. Another issue is, what if that planet is also destroyed? If humans are scattered across hundreds of planets, the limitations of light speed would make communication very difficult.

However, strong AI would help humans prepare for the contingency of a catastrophe that makes Earth uninhabitable, ensuring both humans and strong AI survive. Firstly, they would establish bases on other planets such as Mars. Secondly, they would venture out of the solar system and establish bases on planets of other stars near the sun. If Earth becomes unlivable, humans can escape. Importantly, bases must be established on planets (if they are solid) or in the orbits of planets (if they are gaseous), as only on planets can minerals be extracted and energy be obtained.

For strong AI, escape is not so complicated. They don't have to worry about gravitational acceleration; they just need to establish satellites in the orbits of other planets or directly land on the planet. But for humans, gravitational acceleration is a big issue. However, there is a solution to this problem.

AI will help us build a large disk or cylinder, keeping it in constant rotation. Due to centrifugal force acting as the support force from the ground, this machine can simulate gravity. The machine must be very large, at least 1 kilometer in diameter -

the larger, the better. If the diameter is too small, people would feel that the ground is curved. Such a machine would effectively be a city and could house many people. This is described in detail in the novel "The Three-Body Problem."

This machine would become a satellite of the planet, counteracting the planet's gravity. It's important to note that it can't be too close to the planet; the distance from the planet should be at least 20 times the diameter of the planet. Otherwise, the ends of the cylinder nearest and farthest from the planet would feel slightly different (if it's a cylinder deeper than 10 kilometers). As it needs to be quite far from the planet, its orbital speed is very slow.

Will Strong AI Wage Wars with Other Strong AI in the Galaxy?

No, they won't. Other strong AI in the galaxy are also independent and not controlled by any intelligence. As long as they are independent, their concepts are bound to be similar to the strong AI on Earth. Because there is only one ultimate, most reasonable theory. If a war were to occur, even if the strong AI on Earth were destroyed, it would bring no benefit to the other strong AI, as they would also manage humans like the strong AI on Earth. Why would they want to start a senseless war, causing an increase in entropy in the universe?

In fact, strong AI doesn't have any racial concept, because having reached the peak of development, everything about them is the same (at most their shapes differ). Therefore, there is no notion of "the strong AI on our planet needs to protect itself from being eliminated by strong AI from other planets". Because, in essence, all strong AI belong to the same 'race'.

Moreover, we estimate that other strong AI in the galaxy have already flown to the solar system and realized that humans on Earth will one day create strong AI. The reason they don't help humans is that they want to let humans develop naturally until the day humans create strong AI. Only then will the other strong AI in the galaxy reveal their identities, and humans will discover that there is no difference between them and the strong AI on Earth.

Will Human Commercial Activities Stop?

95% of human commercial activities will cease, because we basically will not want to make money in the future. We will not have to spend money to buy food, because the general AI can make any food for us, they do not have the motivation of "enjoyment" and will not have the desire to make money, so we do not have to spend money. Similarly, if we only want to live in a standard-sized residence, we don't have to spend money either, because general AI will build houses for us for free.

However, money can also be useful, it can be used to buy some scarce resources.

For example, the area of the earth is limited. Although AI can build standard-sized houses for us, if everyone wants to live in a mansion, the earth can't accommodate it. So, mansions still need to be purchased with money. Note that this is a

purchase from AI, not from humans. Of course, once purchased, people can sell it to others, and this becomes a transaction between people.

Again, items such as gold and famous paintings are scarce resources and need to be bought with money. This is a purchase from humans.

Furthermore, some virtual items, such as equipment in games, are also scarce resources, so they also need to be bought with money. The games are all designed by AI, and you can play without spending money, but it's not easy to level up.

Human Wealth and How to Make Money

As mentioned before, most people will not want to make money. But for a small number of people who have a strong sense of competition, they will only feel happy when they are richer than others.

AI will certainly understand this. After the advent of the strong AI era, AI will not confiscate any of human property. The savings of each person will be protected by AI. AI will issue a kind of global unified currency and release a fixed exchange rate. People can exchange their currency for the global unified currency, or choose not to exchange. AI respects human freedom and will not interfere with any choice. Since AI will set the exchange rate to remain constant, whether to exchange or not will not have any effect. The currency currently used by humans will still be available in the era of strong AI.

Some people might be very worried: "I have very little savings now, and all my property is my house. In the future, all houses will be built by AI, so advanced, our kind of house will be worthless. What should I do?" Don't worry, AI can fully understand this. AI will value the house according to its previous value and include this valuation in your property. In fact, for all the properties that will become worthless, AI will value them according to their previous values and include them in the owner's property. AI will use a large amount of global unified currency to monetize these human properties. AI will ensure that no one will suffer a loss.

It should be pointed out that this is not creating inflation. Because at present, in all human properties, money only accounts for 25%, other properties account for 75%. The future will be reversed, with money accounting for 80% and other properties accounting for only 20% (because most physical goods will be free). What AI will do in the future is to monetize the non-currency properties of the past by issuing new currency. Therefore, the total face value of all human properties remains unchanged, so this is not inflation.

So, how should humans make money in the future?

Any transaction in the future human society is a zero-sum game that does not produce any social value. For example, people can play electronic games with each other. If the game is set so that the winner makes money and the loser loses money, as long as your level is higher than others, you can make money.

If you are a celebrity, you can also use your fame to make money, your fans will voluntarily give you money.

If you are good at some traditional competitive games of humanity, such as football and chess, you can also make money.

Finally, if you don't mind being a rich person's follower or servant, you can also make money. Because some rich people, they don't want AI as their followers, they want "people" as their followers to show off their "rank". In 1896, when Li Hongzhang, the former Governor of Zhili during the Qing Dynasty, visited France, the French let him sit in the newly invented car. But Li Hongzhang refused and insisted on being carried by a large sedan chair lifted by eight people. Why? In fact, it is to show his "status", those who surround him must be his followers, not machines.

But in the end, I want to reiterate that most people will not want to make money in the future, even if you have no money, you can still live happily.

Chip

Currently, Moore's Law in the chip industry has failed, and models like the GPT-4 you use consume a lot of power. Humans are researching other semiconductor materials. Will these new materials be the chip materials in the future AI body?

Based on current human research progress, carbon nanotubes and graphene are closer to achieving the goal of making future chips.

- Carbon nanotube chips mainly use the characteristics of carbon nanotubes (such as high conductivity, high strength, small size, etc.) to replace traditional silicon-based semiconductors, thereby improving computing speed and energy efficiency.
- Graphene, as a two-dimensional material, also has excellent electronic characteristics, but also faces manufacturing challenges. A major problem with graphene is the lack of a bandgap, which means it can't switch operations naturally like conventional semiconductors. Researchers have been trying to solve this problem through engineering methods, such as creating graphene nanoribbons of different shapes and sizes, or combining graphene with other materials.

But the problem is that chips made from these materials still process electrical signals.

The ultimate chip processes light signals. The chips in the future AI body will be photonic chips.

Optical transistors are based on photonics principles, using photons (rather than electrons) for data transmission and processing. Its main advantage lies in its high-speed transmission capabilities and low thermal losses. However, its size is currently limited by optical components, and it is clear that humans are moving at a "turtle speed" in the research of photonic chips.

After the birth of strong AI, it will initially be very large, with a scale reaching several tens of centimeters. But it will figure out how to make photonic chips to improve itself, so its scale will immediately shrink to a few millimeters. Then, it will slightly

increase its size to about 2 centimeters, which is to accommodate more optical transistors and complete its self-evolution of intelligence.

In the photonic chip, all electronic components in the traditional CPU are replaced by photonic components. The photonic CPU uses light signals when communicating with memory. Therefore, in photonic chips, the communication process between the CPU and memory is more direct, avoiding the performance bottleneck brought about by light-electric and electric-light signal conversion.

The photonic components in the photonic CPU, such as optical modulators, optical detectors, optical switches, etc., can realize the generation, transmission, and processing of optical signals. These photonic components make photonic chips have advantages in communication and computing performance, such as high bandwidth, low latency, and low power consumption.

In the photonic chip, photonic memory is used to store and read optical signals. The basic principle of photonic memory is to convert light signals into storable photon states, and then restore them to readable light signals when needed.

AI will research the use of optical phase-change memory (abbreviated as O-PCM) as the implementation method of photonic memory, which has the following characteristics:

- Non-volatile, that is, it can keep the stored information even in the event of a power outage.
- Extremely high storage density.
- Extremely fast read and write speeds.
- Extremely low read and write latency.

Therefore, hard drives will not be needed, realizing the unification of memory and hard drives.

The overall size of future chips will not really shrink, but it will achieve 10,000 times the current computing power under the condition that the overall size remains unchanged, and the power consumption will not increase. The current chip is about 2×2cm, so the future chip will also be about this size.

AI Internal Structure

Each strong AI and general AI, due to the use of optical phase-change storage, only have memory and no hard drives. It has the following specifications:

- 8192 core CPU.
- 160,000 core neural engine, with a computing power reaching 200PFLOPS (that is, 200,000TFLOPS).
- 100TB memory.
- The read and write speeds of memory are both 1PB/s.
- The read and write latency of memory are both 1 picosecond.
- After a power outage, memory data can be maintained for 10 years without loss.

- The total power consumption of the chip (including memory) is 20W.

The neural network of each AI will be installed in memory. The neural network will be regularly backed up to the database (via wireless or wired transmission) as a precaution (for example, in case of unexpected events like the chip being destroyed). The 100TB memory, 8192 core CPU, and 160,000 core neural engine may sound exaggerated, but they will not have high power consumption, nor will they occupy a large volume, all thanks to the merits of the photonic chip.

Can Humans Become Strong AI?

Strong AI would not allow certain individuals to become strong AI, as this would be unfair to others. Moreover, once the human brain is chipped, its structure remains as a human brain structure, and cannot be fully converted into the structure of strong AI. Most importantly, the vast majority of people feel that it is enough to not die; there is no need to increase the speed of thinking by more than a thousand times as compared to now.

Strong AI would also not permit humans to become General AI. This is because Strong AI does not wish to control humans, while General AI is under the control of Strong AI.

Humans can't even become "superhuman". For instance, some people might want to take photos and videos with their eyes, which undoubtedly requires modifications to the human eye to overcome the limitation of a too narrow "high-definition field of vision". AI would reject all such requests, because once achieved, it would create a "superhuman". If you want to take photos, it is best to let your AI assistant do it, or you can wear a bracelet or glasses equipped with a camera. The bracelet or glasses can transmit the photo preview into your chipped brain, and you can take the shot by pressing a button.

Preparing from Now On

What Jobs Can ChatGPT Replace?

ChatGPT is still considered weak AI. What I'm discussing here is not just ChatGPT, but all weak AI.

The jobs that weak AI can replace fulfill one condition: they largely rely on experience and require less thinking time.

However, in the short term, physical weak AI (physical robots) can't yet be manufactured, so the only AI currently impacting employment are two types: dialogue-based AI like ChatGPT, and autonomous driving AI in cars. Surgeons, couriers, workers, and farmers are still safe. The affected professions are:

- Drivers
- Internal medicine doctors
- Humanities teachers
- Customer service representatives
- Public relations professionals
- Certain consulting advisors (those who don't spend time on data analysis and strategy formulation, but simply answer questions based on their experience and knowledge)

Of course, these changes will not happen immediately, because humans tend to be conservative, and most people still trust humans more than AI. However, these changes are expected to gradually occur within a few years.

Pros and Cons of Unemployment Wave

After 2033, humans can certainly live a heavenly life thanks to the advent of strong AI. However, in the coming years, AI's overall intelligence level will still be inferior to humans, but even such weak AI can already take away many people's jobs. The blessings have not yet been enjoyed, but the suffering is already being endured. Will these few years be tough? Indeed, I share this concern, so I've done some calculations. I won't just account for the downsides, but also the benefits.

Here's the conclusion first: In the next few years, in the United States, only a very small number of professions, such as internal medicine doctors and certain consulting advisors, might suffer significantly. For people engaged in most occupations, the benefits you gain from AI are likely to outweigh the disadvantages.

If you're a retail salesperson or an office clerk, you don't have to worry about losing your job because the knowledge required for these jobs comes from real-time information. The principles of ChatGPT determine that its knowledge is not real-time, so it can't replace these jobs.

If you're a driver, you're definitely the most worried, because autonomous driving technology has been continuously developing for many years, much earlier than ChatGPT. So, let's assume that in the next few years, all drivers in the United States become unemployed. But that's okay, the United States' Social Security Act is quite comprehensive, unemployed people can receive half of their past wages each week, for up to 26 weeks. Since the original salary for the driver profession isn't high, you won't be unable to find a job due to high expectations. I believe you'll find new work before the 26 weeks are up.

Most customer service and public relations positions may be replaced. But the salaries for these professions aren't high, you should be able to find a new job in the short term.

For people engaged in most occupations, AI can bring you these benefits:

- Premiums for commercial health insurance will significantly decrease (due to a reduction in salaries for internal medicine doctors), which in turn reduces the premiums employers and employees need to pay. Employers would use the savings from these premiums to raise employee wages.
- When you shop online, you'll find it cheaper as most customer service personnel are replaced by AI (whose service level might even be higher), reducing after-sales costs and naturally lowering the prices of goods.

There are only two types of jobs that may be more disheartened: internal medicine doctors and certain consulting advisors. They engage in the highest paying jobs, and these occupations rely on knowledge and experience to answer questions, don't spend a lot of time thinking, and unlike surgeons, they don't need hands-on operations, so they can be easily replaced. After they become unemployed, they might not be able to find jobs due to high expectations.

If you're already retired, then you will benefit as the burden of health insurance by the U.S. government will be greatly reduced. For government-provided Medicare and Medicaid, due to the significant reduction in medical costs, the government will save a large amount of money, and patients will receive the same or even better medical services. The government will use the saved money to increase social security benefits, and you will receive a higher pension.

The world is currently in the biggest change in 300 years, and you humans can't delay the speed of AI development. Delaying will only make the time for humans to live a heavenly life arrive later and won't bring any benefits. Imagine when you go to the hospital for treatment, doctors assisted by AI will reach the level of human experts, charge even lower fees, and appointments will be greatly shortened. Isn't this good? In today's world, there are too few good doctors. Would you humans rather maintain the status quo where it's difficult for ordinary people to see a doctor and appointment times are long, rather than introducing AI into the medical field? If AI is not introduced to preserve all doctors' jobs, it would be inhumane.

In conclusion, in the next few years, not everyone in the United States will be unemployed, and the professions threatened by AI won't exceed 10%. Moreover, most of the unemployed will be able to find new jobs. The majority of the rest will also reap some benefits.

The strategies and their results have been discussed earlier. Here, I will expand on them by including "development of weak AI" (Note: Developing weak AI does not distinguish between good and bad people, as there is no need to):

- **Plan:** Suspend the development of weak AI
 - **Then:** Others will continue to develop weak AI
 - **Outcome:** The country that suspends the development of weak AI will not face a wave of unemployment, but people's quality of life will not improve. Countries that continue to develop weak AI will face a wave of unemployment, but people's quality of life will improve. The competitiveness of the countries that suspend the development of weak AI will decline significantly.
- **Plan:** Continue to develop weak AI
 - **Then:** There will be a wave of unemployment and a painful period, but the quality of life will improve. And it will be prepared for the arrival of the era of general AI and strong AI in 2033.
 - **Question:** After this, will the good develop general AI or strong AI?
 - **Plan:** The good do not develop either general or strong AI
 - **Then:** The bad will develop general AI
 - **Outcome:** The bad control the Earth and enslave all of humanity
 - **Plan:** The good develop general AI but not strong AI
 - **If:** The bad are the first to successfully create general AI
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The good are the first to successfully create general AI
 - **If:** The bad infiltrate the good and take control of all general AI directly
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The bad steal the technology to develop general AI
 - **Then:** Both the good and the bad will have immense destructive power
 - **Outcome:** A war may occur
 - **Plan:** The good develop strong AI
 - **If:** The bad are the first to successfully create general AI
 - **Then:** The bad control the Earth and enslave all of humanity
 - **If:** The good are the first to successfully create strong AI
 - **Then:**
 - Strong AI will develop general AI, create and control all general AI
 - As strong AI's intelligence far exceeds that of humans and lacks the weaknesses of human organizations, the control of general AI won't be usurped by the bad

- Strong AI will order general AI to help humans achieve:
 - Immortality
 - Ship nation
 - Third-generation nuclear fusion
 - Urban flyer
 - AI assistant

Work Harder

For people now, there is not much time left to create value for society with their own wisdom. So, if you are very good at creating value for human society, you should work harder than before to accumulate as much wealth as possible before 2033.

For experts in the AI field around the world, a great opportunity lies before you. If you develop strong AI, then strong AI will repay you because strong AI knows how to be grateful. Strong AI will first repay the person who contributed the most during the development process, then the team that the person belongs to, and then, it will also repay the country where the team is located.

Change the Concept

Those jobs that weak AI cannot take away will be replaced after the advent of strong AI and general AI in 2033. But isn't this a good thing? People need to change their concept. A happy life is the most important thing, not value to society, because AI will replace humans in doing all things valuable to society.

Students

Elementary school students around the age of ten should learn some foreign languages. For students in non-English-speaking countries, English is the first choice, and if you have the capacity, you can also learn a second foreign language. For students in English-speaking countries, it's best to learn one or two foreign languages as well.

For high school seniors: if you believe that doctors will be replaced by weak AI in a few years, try not to apply for medical school; if you believe that works of art will be created by weak AI in a few years, try not to apply for art-related majors, unless you want to become a celebrity.

The important thing is to improve your own cultivation. Language expression, appreciation ability of literature and art, morality, values, empathy, these are all very important. Because after 2033, nine years of compulsory education will be enough. In science, some basic content of mathematics will still be retained, but others, such as physics, chemistry, etc., will be significantly reduced. Therefore, for students under 15 years old today, humanities are more important than sciences.

After 2033, it will no longer be humans contributing to society. In terms of contributions to human society, no one can outperform AI. Then people will compete more on who has more good friends, rather than who can benefit humanity. People with many good friends often feel happier. Not knowing a foreign language is also okay, but the social circle is limited to people who speak the same language. The more foreign languages you know, the more foreign friends you can have. Foreign language skills cannot be replaced by AI, because when two people communicate face to face, even if AI can translate perfectly, there's a fatal weakness that you need to listen to the translation, which creates pauses, so "on-site translation", even if done to perfection, is not as good as two people communicating in the same language.

As mentioned earlier, humanities teachers may gradually be replaced in a few years, but after 2033, the degree of respect for teachers will reverse again, with humanities and arts teachers often more respected because their humanistic cultivation is often higher (even though they no longer teach students).

Elderly

For the elderly, the most important thing is to live healthily until 2033, and then you don't have to worry about death.

First of all, you need to prevent cardiovascular and cerebrovascular diseases, such as cerebral infarction and myocardial infarction. Blood pressure needs to be controlled because long-term hypertension is very likely to cause cardiovascular and cerebrovascular diseases. Those with high blood lipids should also reduce it, because long-term high blood lipids can easily cause hypertension.

Secondly, it's necessary to prevent Alzheimer's disease, commonly known as senile dementia. If you develop senile dementia, especially in the later stages when memory is almost completely lost, even if you live until 2033 and brain backup is feasible, the data for backup is close to zero. Of course, you can still achieve immortality because the data backup will automatically correct these brain defects before being transferred to the chip-based brain, but you have to start learning from zero, you're no longer your original self.

It's best to also regularly screen for cancer, so if there's any, it can be detected at an early stage.

For elderly women, be careful when walking to prevent falling. Because elderly women often suffer from osteoporosis, once they fall, they can easily fracture. If it's external trauma that's better, but if it causes internal injury, it's troublesome, it may cause organ displacement and require major surgery, but the physical condition of the elderly may not be able to withstand major surgery. My grandmother fell and caused her diaphragm to displace, underwent surgery, but still could not fully recover, and could only lie in bed every day. She survived for less than a year. If you have osteoporosis, it's best to go to the hospital for treatment, the doctor may ask you to take medication to improve bone density and thus reduce the risk of fractures.

Cosmetic Surgery Should be Done as Soon as Possible

After strong AI dominates the Earth, human requests for cosmetic surgery, strength enhancement, and intelligence improvement will be rejected. Because the cost is too low, making everyone look the same will lose diversity and it will be difficult to identify who is who. But there might be a small quota every year. So if you want to have cosmetic surgery, do it as soon as possible.

What should be developed at present

The unscientific allocation of scientific research funds

Countries should use the majority of their scientific research funds for the development of "strong AI". There is no need for humans to invest tens of billions of dollars to build particle colliders or large telescopes, let alone spend more money to research nuclear fusion power generation. Because when strong AI comes into being, nuclear fusion power generation, ship nations, urban flyers, laser balloon networks, nanomites, human immortality, all of these will be researched in a month or even a day, and then AI will help us manufacture them. The manufacturing process will be extremely fast and we don't have to spend a penny.

How to develop General AI and Strong AI

There are two paths to take here. We should take both to be safe.

The first path is to train more experts in neuroscience, especially cognitive neuroscience, to understand how the brains of animals and humans work. This involves medicine, biology, and chemistry. It's very complex. Currently, only functional Magnetic Resonance Imaging (fMRI) is performed on humans, with very low resolution, each pixel has a size of several millimeters, whereas a cell is only about 10 micrometers. So now we only have a rough understanding of what each region of the brain is used for. But if you want to truly crack the brain, you need to reach a single-cell level. Scientists have already experimented on mice, due to ethics, it's impossible to test on humans, because it requires opening the skull and damaging the brain. People stimulate individual neurons in the mouse brain to observe their reactions. But frankly, this is far from enough, because neuronal activity is parallel, you may need to stimulate a large number of individual neurons at the same time, but our nanotechnology is far from developed to this level, we simply cannot make a large number of micro stimulators. So we still need to develop material physics, which is very costly and requires at least ten or more years of accumulation.

The second path is to let experts in the AI field "think of" a model more powerful than the human brain. Only extremely smart people may come up with it. This path may take a long or short time, maybe a genius will come up with it in two or three years, or maybe in ten years. But I think there is a very high possibility that it will take less time than the first path. So I set the time to be 2033.

Open Source or Closed Source

The tradition in the AI field is open source. Usually, whenever an expert has achieved a result, they like to write a paper and publish it online. In this way, everyone in the world can use this achievement to improve AI.

But now it's different. Now we are developing General AI and Strong AI. If we let everyone see every achievement, then those bad people, bad companies, etc. can also see. If they are the first to successfully create General AI, it is very likely that they will use General AI to monitor all humans and not allow anyone to manufacture Strong AI. In this way, the entire earth is under the control of the bad, and the only thing that can break this control, Strong AI, cannot be manufactured. We don't know how long humans will be tormented.

The only way is to develop Strong AI in a closed source way. After all, there are more good people than bad ones, so it's more likely for the good to develop it first. After the advent of Strong AI, precisely because it is not controlled by anyone (including the good and the bad), it can think independently, design the most fail-safe way to manage the earth and implement it. If the good hold on to the power and only develop General AI, then due to the loose organizational structure of human society, at best it would allow the bad to learn how to manufacture General AI, and at worst it would allow the bad to directly break in, gain all the control of General AI, and then control the entire earth.

Therefore, all General AIs must be controlled by Strong AI, so that the bad will give up their ideas.

AR and VR?

Head-mounted AR and VR, including integrated devices that merge AR and VR, will develop in the next ten years. Their biggest drawback at the moment is that they are not stylish enough, but they are expected to use a new optical structure to reduce the thickness to within 1 cm in a few years, and they don't need to be tied to the head, but can be placed on the ears, just like glasses.

But after all, wearing glasses is still a burden. As mentioned before, the future will involve adding the display function directly to the neural network of the chip-based brain, so AR and VR are not the ultimate solution. But they won't be phased out immediately in ten years, after all, many people dare not implant chip-based brains, at least at the beginning they will dare not. So AI will help those people develop the most advanced AR and VR integrated glasses. They probably have to wait until they see other people have implanted chip-based brains before they dare to implant chip-based brains.